# LASER DIODE NDL7515P Series

# InGaAsP MQW DC-PBH PULSED LASER DIODE MODULE 1 310 nm OTDR APPLICATION

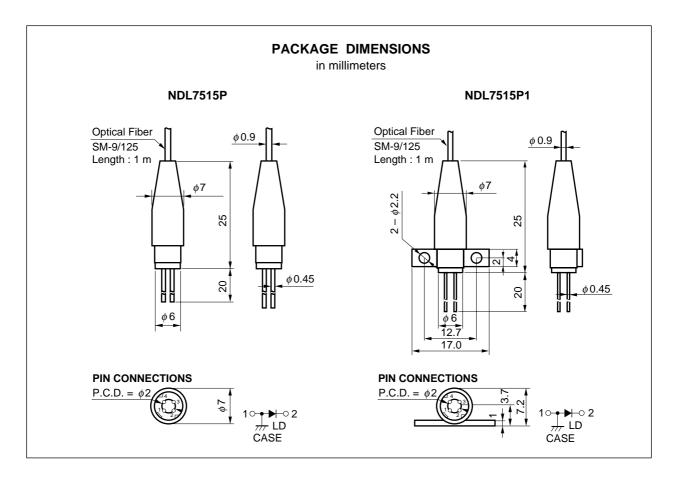
#### DESCRIPTION

NEC

The NDL7515P Series is a 1 310 nm newly developed Multiple Quantum Well (MQW) structure pulsed laser diode module with single mode fiber. It is designed for light source of optical measurement equipment (OTDR).

#### FEATURES

- Output power  $P_f = 20 \text{ mW MIN.} @I_{FP} = 400 \text{ mA}, T_C = 25 °C^{11}$
- Long wavelength  $\lambda c = 1 310 \text{ nm}$
- · Coaxial module without thermoelectric cooler
- Single mode fiber pigtail
  - \*1 Pulse conditions: Pulse width (PW) = 10  $\mu$ s, Duty = 1 %



The information in this document is subject to change without notice.

#### ORDERING INFORMATION

Part Number	Available Connector	Flange Type
NDL7515P	Without Connector	No Flange
NDL7515PC	With FC-PC Connector	
NDL7515P1	Without Connector	Flat Mount Flange
NDL7515P1C	With FC-PC Connector	

# ABSOLUTE MAXIMUM RATINGS (Tc = 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Pulsed Forward Current <sup>1</sup>	IFP	600	mA
Reverse Voltage of LD	VR	2.0	V
Operating Case Temperature	Tc	-20 to +60	°C
Storage Temperature	Tstg	-40 to +85	°C
Lead Soldering Temperature (10 s)	Tsld	260	°C

\*1 Pulse conditions: Pulse width (PW) = 10  $\mu$ s, Duty = 1 %

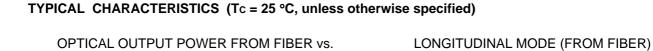
# ELECTRO-OPTICAL CHARACTERISTICS (Tc = 25 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	Vfp	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %		2.5	4.0	V
Threshold Current	Ith			20	30	mA
Optical Output Power from Fiber	Pf	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %	20	30		mW
Center Wavelength	λς	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (–20 dB)	1 290	1 310	1 330	nm
Spectral Width	σ	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (–20 dB)			10	nm
Rise Time	tr	10 to 90 %			1.0	ns
Fall Time	tr	90 to 10 %			1.0	ns

#### ELECTRO-OPTICAL CHARACTERISTICS (Tc = 0 to +60°C)

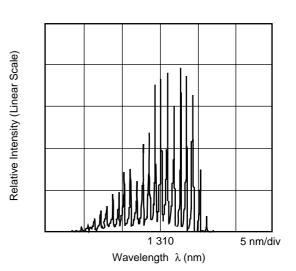
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	Ith				50	mA
Optical Output Power from Fiber	Pf	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %	10			mW
Center Wavelength	λς	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (–20 dB)	1 280		1 342.5	nm
Temperature Dependence of Center Wavelength	Δλ/ΔΤ			0.35		nm/°C
Spectral Width	σ	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (–20 dB)			10	nm

★



OPTICAL OUTPUT POWER FROM FIBER vs.

LD PULSED FORWARD CURRENT 30 Optical Output Power from Fiber Pr (mW)  $PW = 10 \mu s$ Duty = 1%25 Tc = 25 °C 20 15 Tc = 60 °C 10 5 0 100 200 300 400 Pulsed Forward Current IFP (mA)



3

## $\star$ LASER DIODE FAMILY FOR OTDR APPLICATION

Features	1.31 <i>μ</i> m		1.55 <i>µ</i> m		FP <sup>*1</sup>	
Packages	Part Number	P (mW) MIN./TYP.	Part Number	P (mW) MIN./TYP.	(mA)	Remarks
φ 5.6 Can	NDL7103	290/320	NDL7153	220/240	1 000	
	NDL7113	160/175	NDL7163	100/120	400	
4-pin Coaxial Module with	NDL7503P/P1	110/180	NDL7553P/P1	95/145	1 000	P : No flange
SMF	NDL7513P/P1	70/110	NDL7563P/P1	60/80	400	P1: With flange
	NDL7514P/P1	25/50	NDL7564P/P1	20/40	400	
	NDL7515P/P1	20/30	NDL7565P/P1	8/11	400	
14-pin DIP Module with SMF	NDL7502P	125/190	NDL7552P	100/125	1 000	With TEC and
	NDL7512P	90/110	NDL7562P	70/80	400	Thermistor
	NDL7510P	40/55	NDL7560P	20/30	400	

\*1 Pulse conditions: Pulse width = 10  $\mu$ s, Duty = 1 % (modules) Pulse width = 1  $\mu$ s, Duty = 1 % ( $\phi$  5.6 can)

## REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	LEI-1201
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

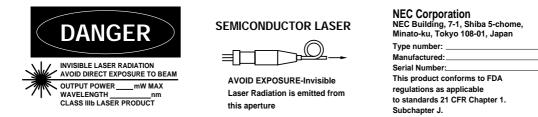
# NEC

[MEMO]

[MEMO]

# CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.



The export of this product from Japan is prohibited without governmental license. To export or re-export this product from a country other than Japan may also be prohibited without a license from that country. Please call an NEC sales representative.

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Corporation. NEC Corporation assumes no responsibility for any errors which may appear in this document.

NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.

While NEC Corporation has been making continuous effort to enhance the reliability of its semiconductor devices, the possibility of defects cannot be eliminated entirely. To minimize risks of damage or injury to persons or property arising from a defect in an NEC semiconductor device, customers must incorporate sufficient safety measures in its design, such as redundancy, fire-containment, and anti-failure features.

NEC devices are classified into the following three quality grades:

"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

- Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
- Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
- Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.

M4 96.5